

REMARKS

An Information Disclosure Statement is concurrently filed herewith to bring to the Examiner's attention a U.S. patent document cited in an Office Action issued by the Chinese Patent Office in a counterpart foreign application.

By the present Amendment, Applicants have amended claim 1 to correct an informality and not for reasons related to patentability. Claims 1-19 are currently pending.

In the Office Action, the Examiner rejected claims 1-20¹ under 35 U.S.C. § 102(e) as anticipated by Hamada et al. (U.S. Patent No. 6,329,269). Applicants respectfully traverse this rejection.

In order to properly anticipate Applicants' claimed invention under 35 U.S.C. § 102, each and every element of the claim in issue must be found, "either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim. Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)." See M.P.E.P. § 2131, 8th ed., Rev. of May 2004.

Hamada et al. fails to teach each and every element of the claimed invention. For example, claim 1 recites a semiconductor method for a liquid crystal display that includes, inter alia, "crystallizing the layer of amorphous silicon to form a layer of polysilicon; [and] treating the layer of polysilicon to change the properties of a surface of the layer of polysilicon." Hamada et al. fails to teach at least these elements of claim 1.

¹ Applicants respectfully point out that claims 1-19 are pending.

Particularly, Hamada et al. teaches a method for fabricating a thin film transistor and discusses two embodiments. The first embodiment teaches steps for forming a polycrystalline silicon film including 1) forming “an amorphous silicon film 2 . . . on the substrate 1” (col. 8, ll. 43-44); 2) performing “a heat treatment . . . to epitaxially grow the amorphous silicon film 2 in a solid phase for obtaining a polycrystalline silicon film 3 . . . in an atmosphere containing gas 4 containing oxygen element” (col. 8, ll. 62-66); and 3) performing “a heat treatment . . . in order to reduce crystal defects in the polycrystalline silicon film 3 . . . in an N₂ atmosphere” (col. 9, ll. 7-14). The second embodiment of Hamada et al. describes a method for forming a polycrystalline silicon film including steps similar to the method of the first embodiment except that, in the second embodiment, the heat treatment to epitaxially grow the amorphous silicon film 2 to obtain polycrystalline silicon film 3 is performed in a wet oxygen environment instead of an atmosphere containing gas containing oxygen element. See Hamada et al., col. 11, l. 42 - col. 12, l. 65.

In the Office Action, the Examiner recognized that “Hamada et al. disclose that the oxygen provides a reduction in surface roughness.” See Office Action at 2; see also Hamada et al., col. 10, ll. 1-6, and Fig. 3. The Examiner further recognized that “Hamada et al. discloses the simultaneous crystallization of the amorphous silicon film and formation of a silicon oxide film on the formed polycrystalline film.” Office Action at 3. The Examiner therefore appears to have considered Hamada et al.'s heat treatment in an oxygen environment (an atmosphere containing gas containing oxygen element or a wet oxygen environment) as anticipating “crystallizing the layer of amorphous silicon

to form a layer of polysilicon” and “treating the layer of polysilicon to change the properties of a surface of the layer of polysilicon,” as recited in claim 1.

Applicants disagree with the Examiner. Claim 1 requires that the step of “treating the layer of polysilicon to change the properties of a surface of the layer of polysilicon” be performed after the layer of polysilicon is formed. Therefore, claim 1 recites “crystallizing the layer of amorphous silicon to form a layer of polysilicon” and “treating the layer of polysilicon to change the properties of a surface of the layer of polysilicon” as two separate, sequential steps. Thus, Hamada et al.’s teaching of a single step of a heat treatment in an oxygen environment clearly cannot anticipate these two separate steps recited in claim 1.

Therefore, Hamada et al. fails to teach each and every element of claim 1, and claim 1 is allowable over Hamada et al. Claims 2-9 depend from claim 1 and are also allowable at least because of their dependence from an allowable base claim.

In addition, claim 10 recites, inter alia, “forming a polysilicon layer by crystallizing the amorphous silicon layer; [and] changing properties of a surface of the polysilicon layer.” For reasons similar to those set forth above regarding claim 1, claim 10 is allowable over Hamada et al. Claims 11-18, which depend from claim 10, are also allowable at least because of their dependence from an allowable base claim.

Finally, claim 19 recites, inter alia, “forming a polysilicon layer using the amorphous layer; [and] oxidizing a surface of the polysilicon layer.” As noted above, Hamada et al. only teaches a single step of simultaneous crystallization of the amorphous silicon film and formation of a silicon oxide film on the formed polycrystalline film, which cannot anticipate both “forming a polysilicon layer using the amorphous

layer” and “oxidizing a surface of the polysilicon layer,” the two separate steps recited in claim 19. Therefore, claim 19 is allowable over Hamada et al.

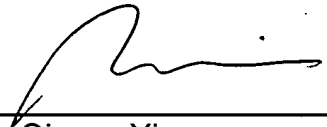
In view of the foregoing remarks, Applicants respectfully request the reconsideration and reexamination of this application and the timely allowance of the pending claims 1-19.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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By: 

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